

A Use Case for Coastal Imagery to Further Data Integration

Karen L. M. Morgan
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The Team

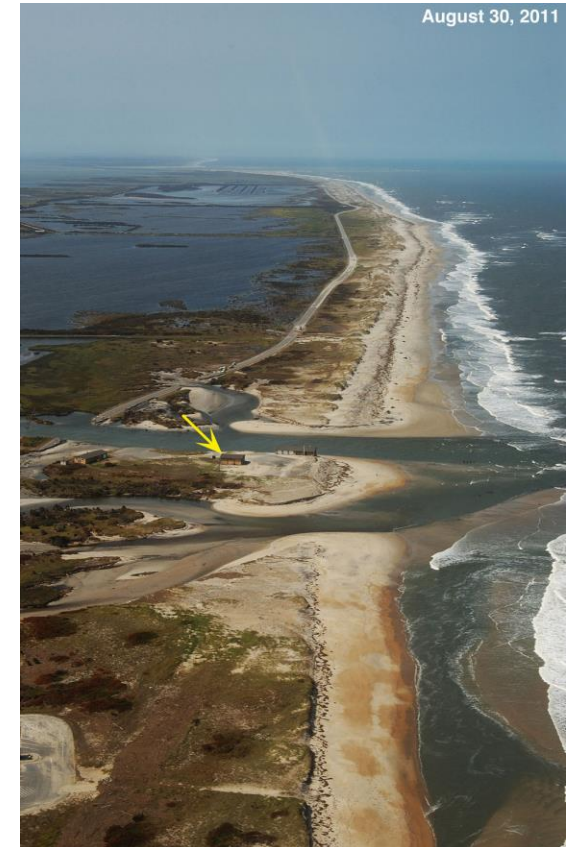
- **Karen L. M. Morgan, Robert R. Wertz, Bryan McCloskey, Jolene Gittens**
- **USGS, St. Petersburg, FL**
- **Carolyn Degnan**
- **USGS, Santa Cruz, CA**
- **VeeAnn Cross**
- **USGS, Woods Hole, MA**
- **Trent Faust**
- **Volunteer, USGS, St. Petersburg, FL**

The Problem

National Assessment of Coastal Change Hazards (NACCH) project currently has a database containing over 140,000 coastal oblique images.

If a researcher needed an image for a presentation or publication, they often had a long route to find the person (me) to get it from. Whether and how quickly they could get their desired image(s) depended on:

- Whether I was available
- Whether I had time to retrieve it
- Whether the request found it's way down the chain to me to begin with



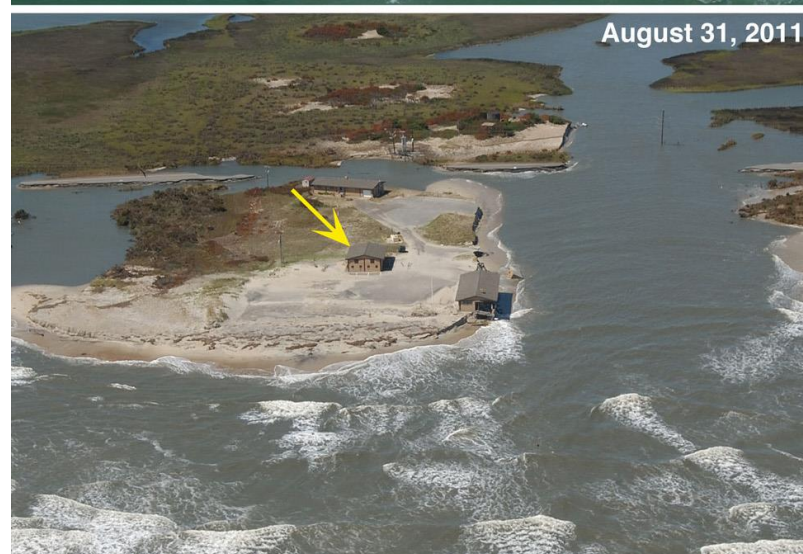
How do we use a Use Case and apply it to a real data problem?

Use Cases

First developed in 1986 by Ivar Jacobson

Definition:

A list of steps, typically defining interactions between a role (known as an "actor") and a system, to achieve a goal. The actor can be a human or a computer system.



Briefly: Use Case Methodology

Peter Fox, RPI

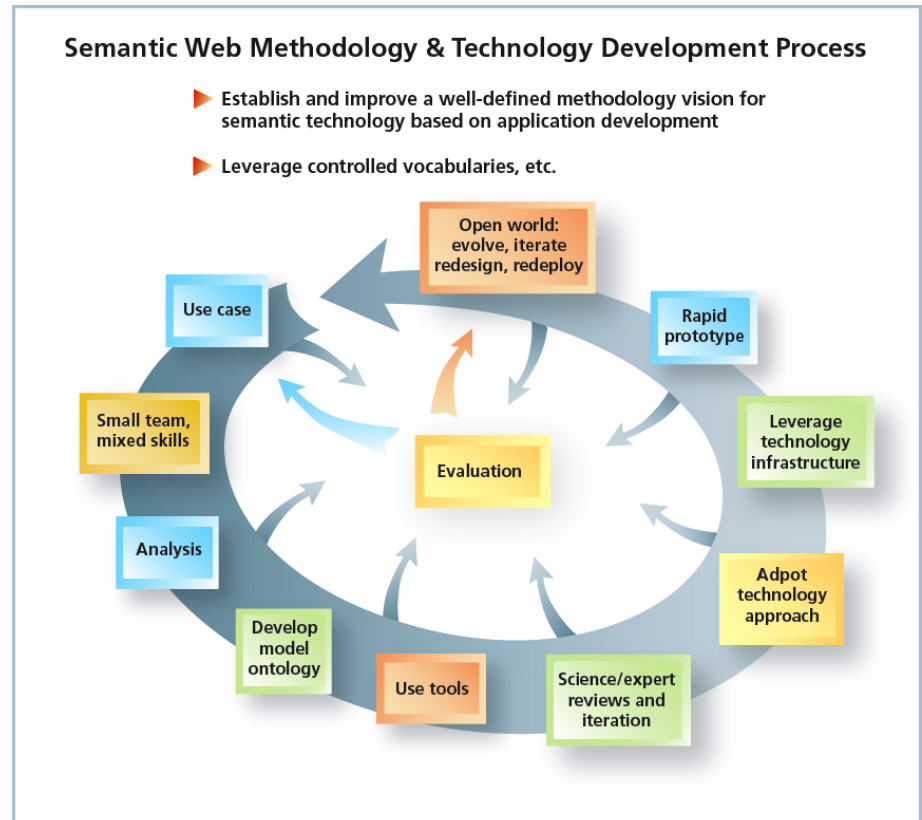
Allows for rapid prototyping and system development.

Started by Fran Lightsom in Woods Hole.

First meeting: Wood Hole 2011
St Pete 2012
Santa Cruz 2012

Last Meeting: St Pete 2013

Plus: numerous WebEx sessions

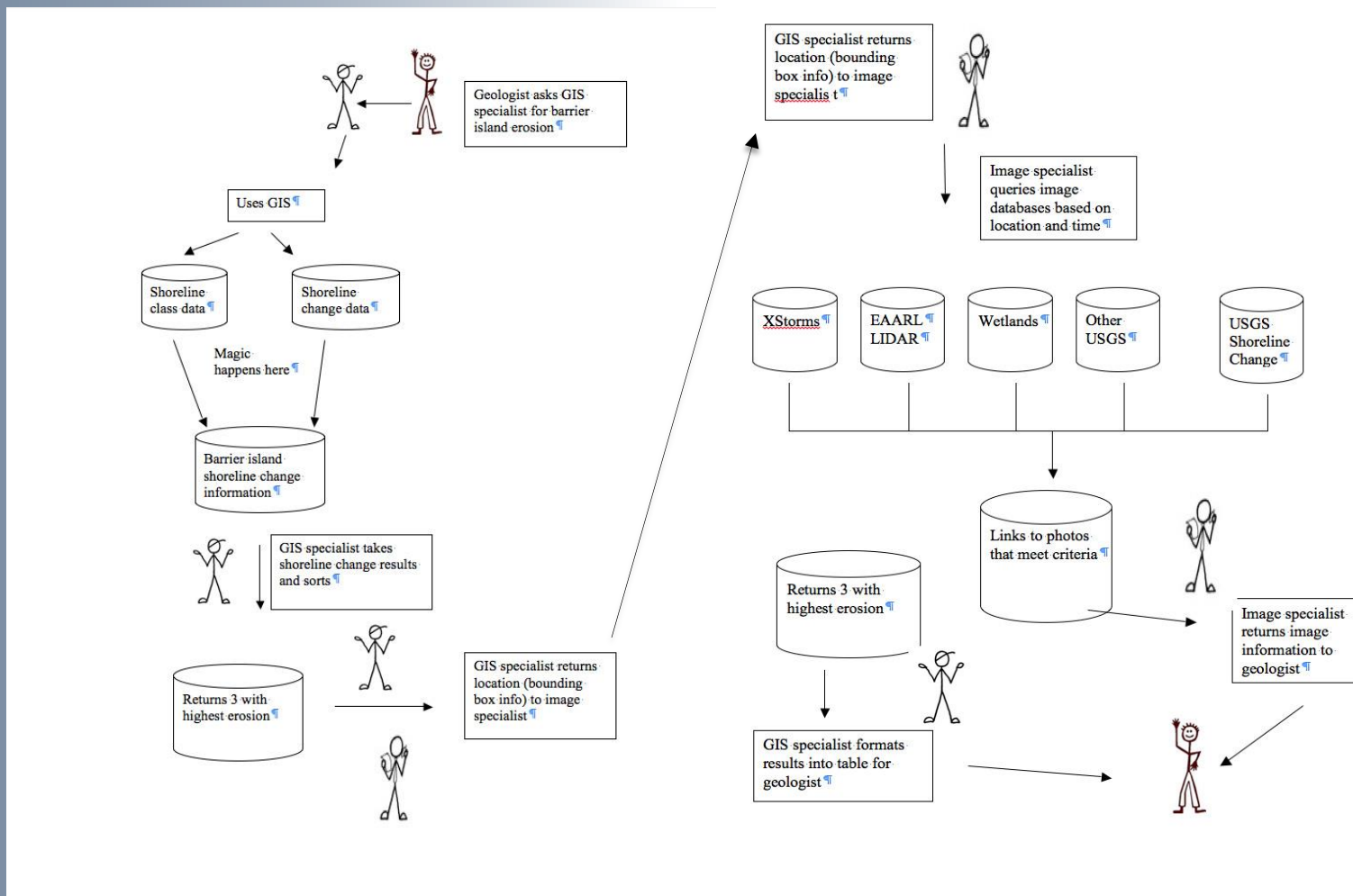


Beginnings: Where it all started

In Woods Hole in 2011, at the first use case meeting, the idea of a tool that could return to a researcher a number of images and/or videos based on erosion values for the coastline, for a multiple coastal locations, was conceived.



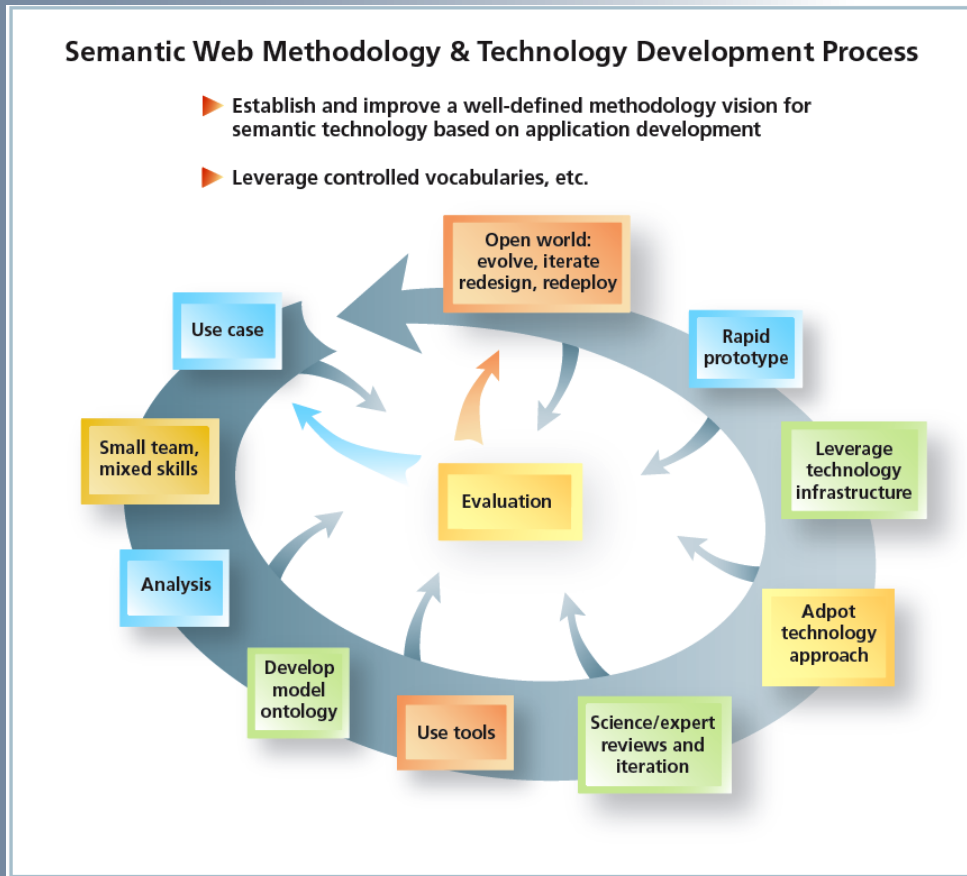
That turned out to be a bit much

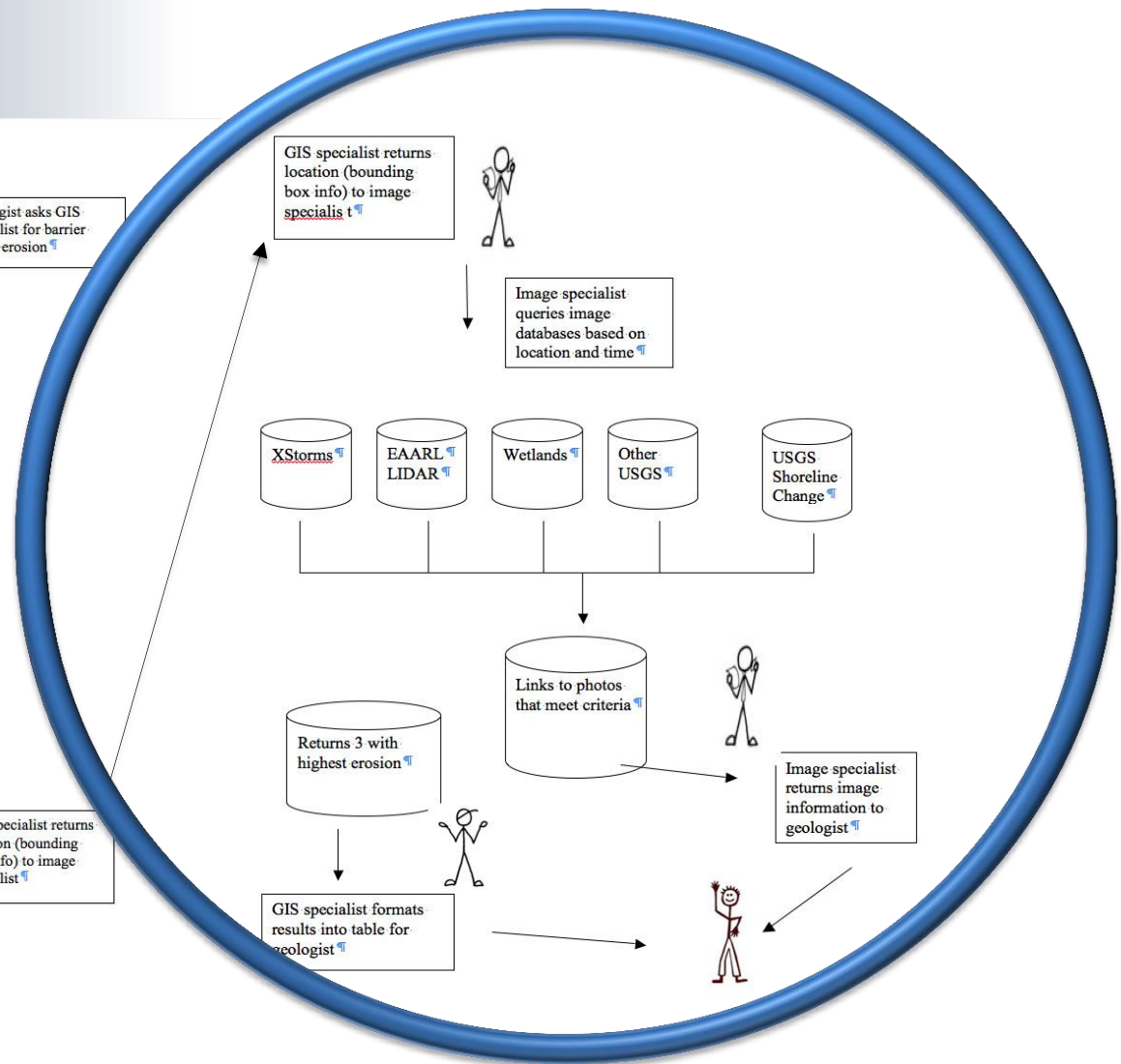
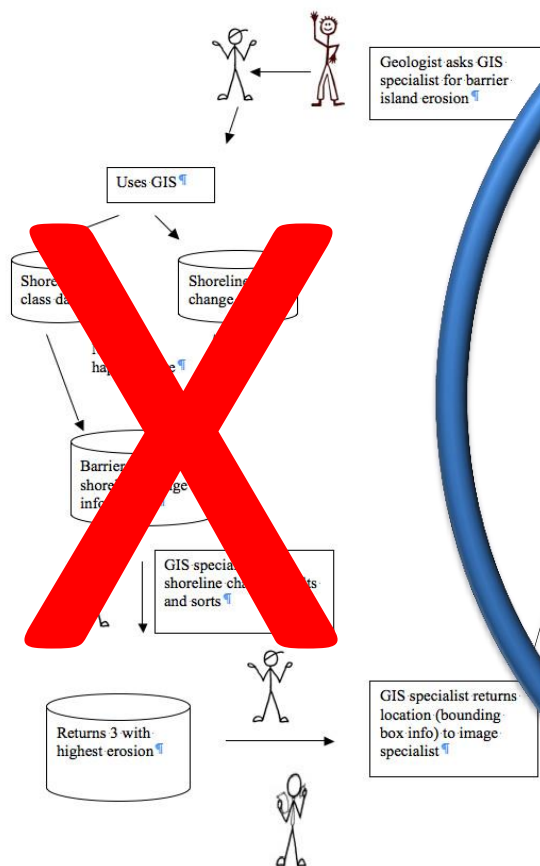


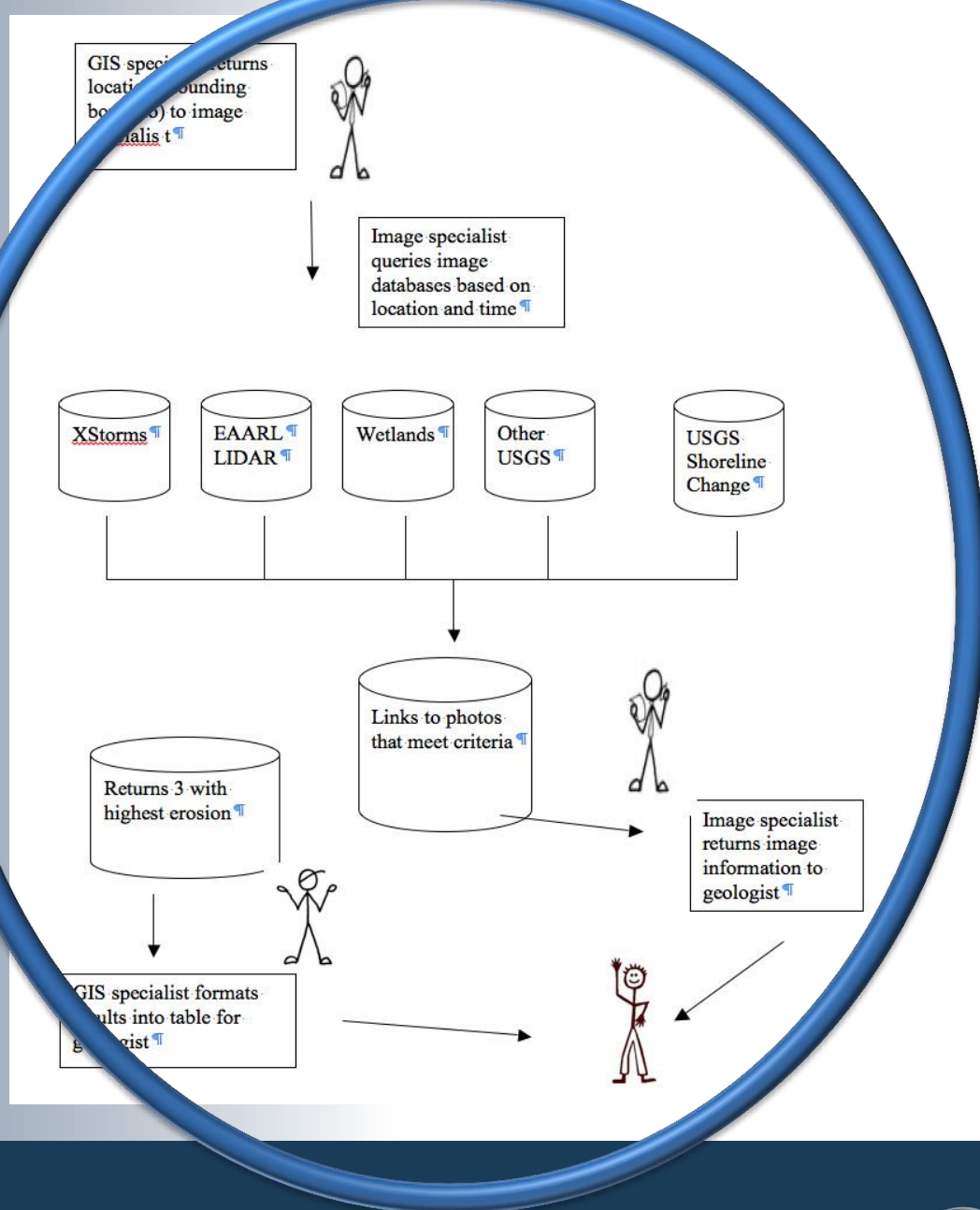
Use Cases are all about iterations... And at that point, no done any development.

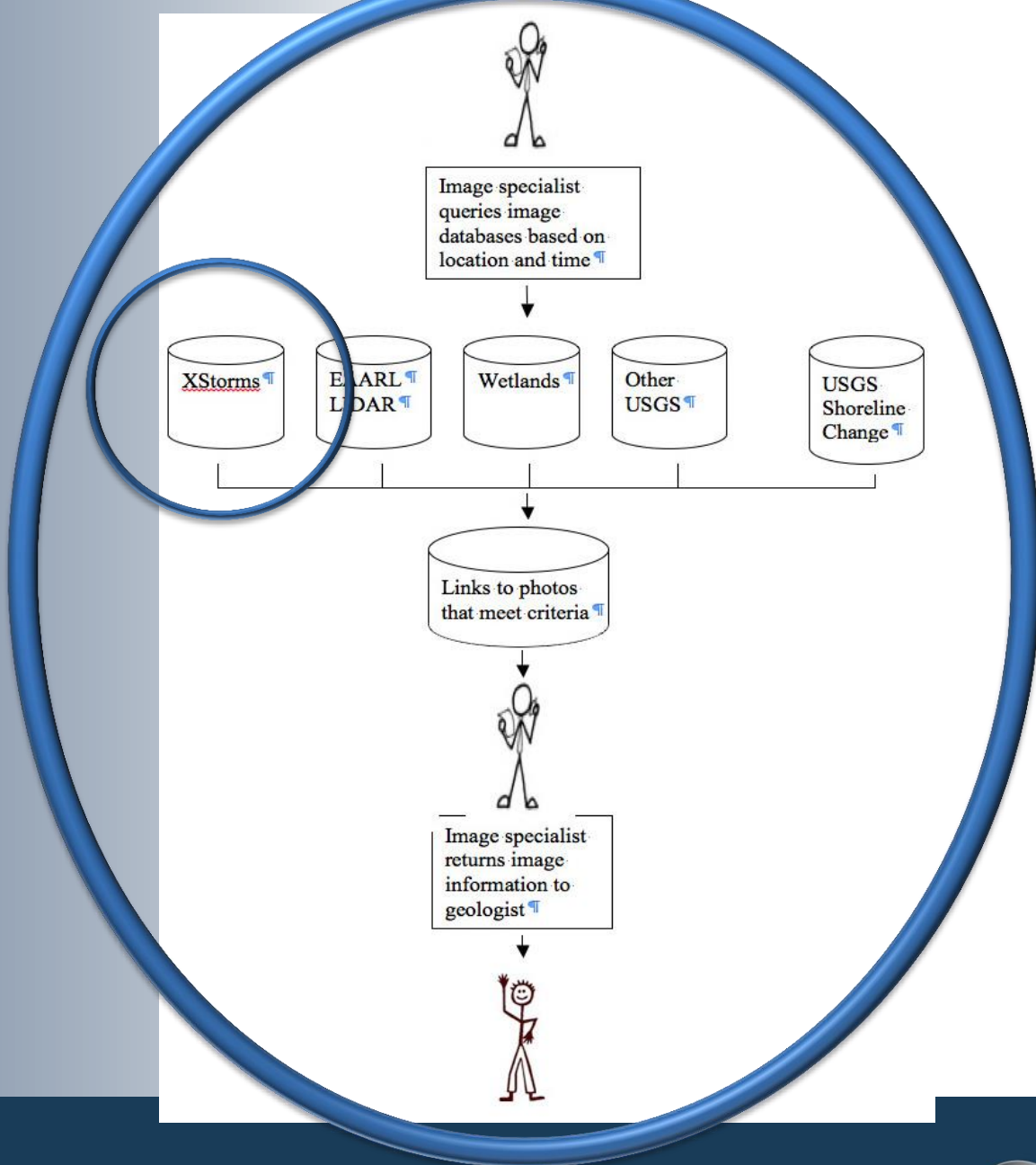
So they took a step back, called myself and another person in as an image specialists and rethought the process.

Instead of trying to have the tool determine where the erosion was greatest, we decided that the user could pick a location they were interested in, pass that information onto the image specialist, and get images returned to them.



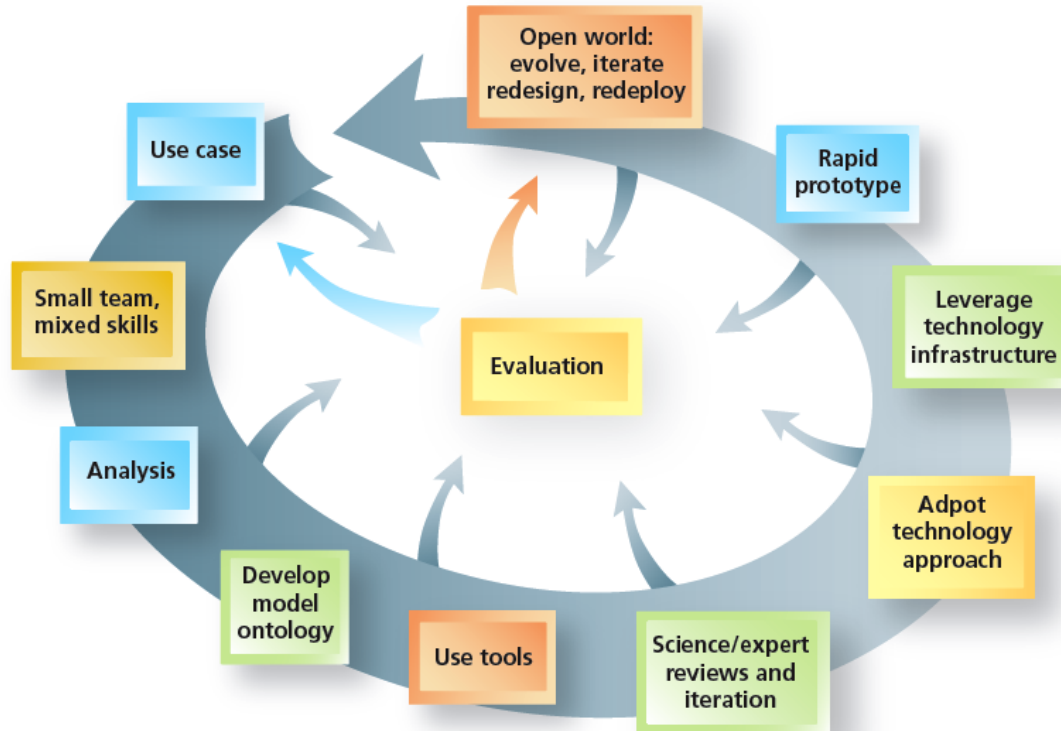






Semantic Web Methodology & Technology Development Process

- ▶ Establish and improve a well-defined methodology vision for semantic technology based on application development
- ▶ Leverage controlled vocabularies, etc.



Version 1:

Pretty Plain

coastal.er.usgs.gov/development/usecase/usecase_dev.php

CMGP Use Case, Barrier Islands — Multiple Database Image Search Prototype

Bounding Coordinates Search

New Search:

Date

From: Month: Day: Year:

To: Month: Day: Year:

Latitude

From:

To:

Longitude:

From:

To:

coastal.er.usgs.gov/development/usecase/usecase_dev.php

CMGP Use Case, Barrier Islands — Multiple Database Image Search Prototype

Bounding Coordinates Search

New Search:

Date

From: Month: Day: Year:

To: Month: Day: Year:

Latitude

From:

To:

Longitude:

From:

To:

You have selected stations located from 27° to 28° N,
and from 82° to 83° W and the time period Aug 28, 2004 to Sep 13, 2004.

0 photos fall within those bounding coordinates.

Result Set Map

Map Satellite Hybrid

Google Map (showing location of 0 images). To use the map, zoom in or out using the buttons on the left. To view information for a photo, click on the a bubble. This map requires enabled JavaScript to view; if you cannot fully access the information on this page, please contact [Jolene Gittens](#).

References to non-U.S. Department of the Interior (DOI) products do not constitute an endorsement by the DOI. By viewing the Google Maps API on this web site the user agrees to these [Terms of Service](#) set forth by Google.

On to the Evaluation Stage.
More discussions, suggestions
and ideas

Version 2:

Added zoom tool, when and where you were looking, and a list of the images shown.

Back to the Evaluation Stage.

More discussions,
more suggestions,
more ideas

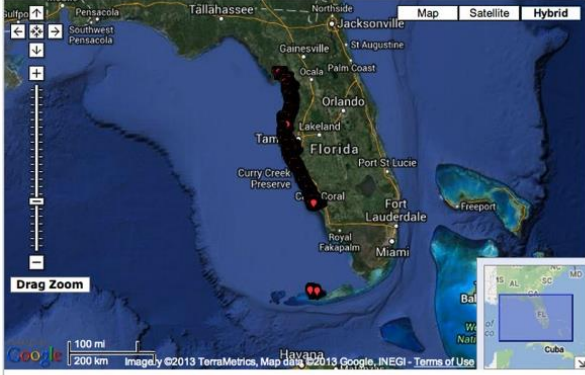
coastal.er.usgs.gov/development/usecase/usecase-old.php

CMGP Use Case, Barrier Islands — Multiple Database Image Search Prototype

Temporal Search:
From:
To:

Spatial Search:
Latitude
From:
To:
Longitude
From:
To:

You have selected stations located from 24° to 30° N and from 82° to 83° W and the time period Jan 01, 1995 to Jan 01, 2014.
9745 photos fall within those bounding coordinates.



Images

| Images | Latitude Longitude |
|-----------------------------------|--------------------|
| 2004_0815_r009s36 | 26.44°N -82°W |
| 2004_0815_r010s01 | 26.44°N -82.01°W |
| 2004_0815_r010s02 | 26.44°N -82.01°W |
| 2004_0815_r010s03 | 26.44°N -82.01°W |
| 2004_0815_r010s04 | 26.44°N -82.02°W |
| 2004_0815_r010s05 | 26.44°N -82.02°W |
| 2004_0815_r010s06 | 26.45°N -82.02°W |
| 2004_0815_r010s07 | 26.45°N -82.02°W |
| 2004_0815_r010s08 | 26.45°N -82.03°W |
| 2004_0815_r010s09 | 26.46°N -82.03°W |
| 2004_0815_r010s10 | 26.46°N -82.03°W |
| 2004_0815_r010s11 | 26.46°N -82.02°W |
| 2004_0815_r010s12 | 26.46°N -82.02°W |
| 2004_0815_r010s13 | 26.46°N -82.01°W |
| 2004_0815_r010s14 | 26.46°N -82.01°W |
| 2004_0815_r010s15 | 26.45°N -82°W |
| 2004_0815_r010s16 | 26.45°N -82°W |
| 2004_0815_r010s19 | 26.45°N -82°W |
| 2004_0815_r010s20 | 26.45°N -82.01°W |
| 2004_0815_r010s21 | 26.45°N -82.02°W |
| 2004_0815_r010s22 | 26.45°N -82.02°W |
| 2004_0815_r010s23 | 26.45°N -82.02°W |
| 2004_0815_r010s24 | 26.44°N -82.03°W |
| 2004_0815_r010s25 | 26.44°N -82.03°W |
| 2004_0815_r010s26 | 26.44°N -82.03°W |
| 2004_0815_r010s27 | 26.44°N -82.03°W |
| 2004_0815_r010s28 | 26.44°N -82.04°W |
| 2004_0815_r010s29 | 26.43°N -82.04°W |
| 2004_0815_r010s30 | 26.43°N -82.04°W |
| 2004_0815_r010s31 | 26.43°N -82.04°W |

Current Prototype:

Version 3

Neater, cleaner, clearer...

and still evolving.

Barrier Islands Photos Use Case

coastal.er.usgs.gov/development/usecase/usecase.php#event-tab

Tampa Reflectivity L Tampa Weather Tropical/Hurricane 5 Yahoo USGS - BisonConnect Karens Work Related Dictionary.com Temp Other Bookmarks

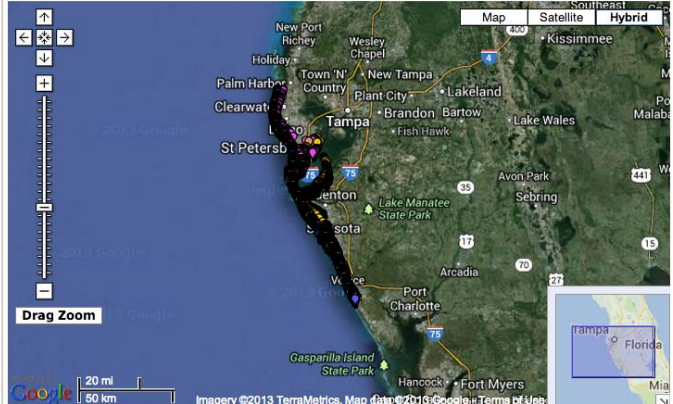
CMGP Use Case, Barrier Islands Photos: Multiple Database Image Search Prototype

Event Search **Spatial/Temporal Search**

Step 1: Select an event and submit search
Returns photos +/- one month and +/- one degree lat/long of hurricane interaction with shoreline.
select hurricane (alpha) or select hurricane (chron) Submit Event Search

Step 2: Refine Search (if needed)
Use fields below to refine event search. Default event search returns photos +/- one month and +/- one degree lat/long of hurricane interaction with shoreline.
Date Range
From: January 1 1990 To: January 1 2020
Latitude
From: 27 To: 28
Longitude
From: 82 To: 83
or state/county select state or select county Submit Refined Search

You have selected stations located from 27° to 28° N and from 82° to 83° W and the time period Jan 01, 1990 to Jan 01, 2020.



Legend: Event Track Event Track within 50 miles of coast
2004-08-15 2005-10-25 2006-11-14 2008-09-14 2010-05-19 2010-05-20 2010-06-22
2010-06-23 2012-02-07

Search Results: 4375 photos fall within the bounding selections.

| Images | Latitude | Longitude |
|-------------------|----------|-----------|
| 2004_0815_r025s03 | 27.001°N | -82.413°W |
| 2004_0815_r025s04 | 27.003°N | -82.414°W |
| 2004_0815_r025s05 | 27.005°N | -82.415°W |
| 2004_0815_r025s06 | 27.007°N | -82.416°W |
| 2004_0815_r025s07 | 27.008°N | -82.417°W |
| 2004_0815_r025s08 | 27.011°N | -82.418°W |

> 500 photos - too many results to Zip

Event Search: Alphabetically

Barrier Islands Photos Use

coastal.er.usgs.gov/development/usecase/usecase.php#event-tab

Tampa Reflectivity L Tampa Weather Tropical/Hurricane 5 Yahoo USGS - BisonConnect Karens Work Related Dictionary.com Temp Other Bookmarks

CMGP Use Case, Barrier Islands Photos: Multiple Database Image Search Prototype

Event Search Spatial/Temporal Search

Step 1: Select an event and submit search

Returns photos +/- one month and +/- one degree lat/long of hurricane interaction with shoreline.

select hurricane (alpha) or select hurricane (chron)

ALBERTO 1994

ALBERTO 2006

ALEX 2004

ALLISON 1995

ALLISON 2001

ANA 1991

ANDREW 1992

ARLENE 1993

ARLENE 2005

ARTHUR 1996

ARTHUR 2002

BARRY 2001

BARRY 2007

BERTHA 1996

BERTHA 2002

BERYL 1994

BERYL 2006

BERYL 2012

BILL 2003

BOB 1991

BONNIE 1998

BONNIE 2004

BONNIE 2010

BRET 1999

CHARLEY 1998

CHARLEY 2004

CINDY 2005

CLAUDETTE 2003

CLAUDETTE 2009

CRISTOBAL 2008

DANIELLE 1992

DANNY 1997

DEAN 1995

DEBBY 2012

DENNIS 1999

DENNIS 2005

DOLLY 2008

DON 2011

EARL 1998

EDOUARD 2002

EDOUARD 2008

ERIN 1995

ERIN 2007

ERNESTO 2006

FAY 2002

FAY 2008

FIVE 2010

FLOYD 1999

FRAN 1996

FRANCES 1998

You have selected stations located from 27° to 28° N and from 82° to 83° W and the time period Jan 01, 1990 to Jan 01, 2020.

Legend:

Event Track

Event Track within 50 miles of coast

2004-08-15 2005-10-25 2006-11-14 2008-09-14 2010-05-19 2010-05-20 2010-06-22

2010-06-23 2012-02-07

Search Results: 4375 photos fall within the bounding selections.

> 500 photos - too many results to Zip

| Images | Latitude | Longitude |
|-------------------|----------|-----------|
| 2004_0815_r025s03 | 27.001°N | -82.413°W |
| 2004_0815_r025s04 | 27.003°N | -82.414°W |
| 2004_0815_r025s05 | 27.005°N | -82.415°W |
| 2004_0815_r025s06 | 27.007°N | -82.416°W |
| 2004_0815_r025s07 | 27.008°N | -82.417°W |
| 2004_0815_r025s08 | 27.011°N | -82.418°W |

Event Search: Chronologically

coastal.er.usgs.gov/case.php#event-tab

CMGP Use Case: Multiple Database Image Search Prototype

Event Search | Spatial Search

Step 1: Select an event and search
Returns photos +/- one month and hurricane interaction with shoreline

select hurricane (alpha) or

Submit Event

Step 2: Refine Search (if needed)
Use fields below to refine event search returns photos +/- one month and hurricane interaction with shoreline

Date Range
From: January 1 To: January 1

Latitude
From: 27 To: 28

Longitude
From: 82 To: 83

or state/county
select state or select county

Submit Refine

ARTHUR 1996
BERTHA 1996
FRAN 1996
JOSEPHINE 1996
DANNY 1997
BONNIE 1998
CHARLEY 1998
EARL 1998
FRANCES 1998
GEORGES 1998
HERMINE 1998
MITCH 1998
BRET 1999
DENNIS 1999
FLOYD 1999
HARVEY 1999
IRENE 1999
GORDON 2000
HELENE 2000
LESLIE 2000
UNNAMED 2000
ALLISON 2001
BARRY 2001
GABRIELLE 2001
ARTHUR 2002
BERTHA 2002
EDOUARD 2002
FAY 2002
GUSTAV 2002
HANNA 2002
ISIDORE 2002
KYLE 2002
LILI 2002
BILL 2003
CLAUDETTE 2003
GRACE 2003
HENRI 2003
ISABEL 2003
UNNAMED 2003
ALEX 2004
BONNIE 2004
CHARLEY 2004
FRANCES 2004
GASTON 2004
HERMINE 2004
IVAN 2004
JEANNE 2004
MATTHEW 2004
ARLENE 2005
CINDY 2005
DENNIS 2005
VICTORIA 2005

You have selected stations located from 27° to 28° N and from 82° to 83° W and the time period Jan 01, 1990 to Jan 01, 2020.

Legend:
Event Track
Event Track within 50 miles of coast

2004-08-15 2005-10-25 2006-11-14 2008-09-14 2010-05-19 2010-05-20 2010-06-22 2010-06-23 2012-02-07

Search Results: 4375 photos fall within the bounding selections.

| Images | Latitude | Longitude |
|-------------------|----------|-----------|
| 2004_0815_r025s03 | 27.001°N | -82.413°W |
| 2004_0815_r025s04 | 27.003°N | -82.414°W |
| 2004_0815_r025s05 | 27.005°N | -82.415°W |
| 2004_0815_r025s06 | 27.007°N | -82.416°W |
| 2004_0815_r025s07 | 27.008°N | -82.417°W |
| 2004_0815_r025s08 | 27.011°N | -82.418°W |

> 500 photos - too many results to Zip

Refine search by entering lat/long values

coastal.er.usgs.gov/development/usecase/usecase.php#event-tab

CMGP Use Case, Barrier Islands Photos: Multiple Database Image Search Prototype

Event Search Spatial/Temporal Search

Step 1: Select an event and submit search
Returns photos +/- one month and +/- one degree lat/long of hurricane interaction with shoreline.
CHARLEY 2004 or select hurricane (chron) Submit Event Search

Step 2: Refine Search (if needed)
Use fields below to refine event search. Default event search returns photos +/- one month and +/- one degree lat/long of hurricane interaction with shoreline.

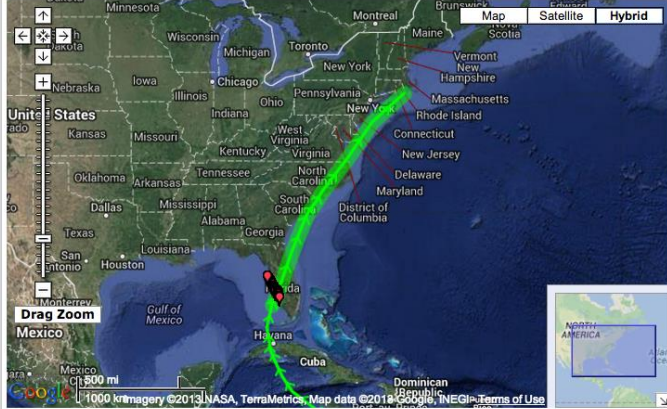
Date Range
From: July 13 2004 To: September 15 2004

Latitude
From: 25.1 To: 42.2

Longitude
From: 70.1 To: 83.4

or state/county
select state or select county Submit Refined Search

Event: CHARLEY (2004) You have selected stations located from 25.1° to 42.2° N and from 70.1° to 83.4° W and the time period Jul 13, 2004 to Sep 15, 2004.



Legend: Event Track Event Track within 50 miles of coast
2004-08-15

Search Results: 1187 photos fall within the bounding selections.

| Images | Latitude | Longitude |
|---------------------|----------|-----------|
| ✓ 2004_0815_r001s01 | 25.927°N | -81.776°W |
| ✓ 2004_0815_r001s02 | 25.948°N | -81.762°W |
| ✓ 2004_0815_r001s03 | 25.953°N | -81.762°W |
| ✓ 2004_0815_r001s04 | 25.971°N | -81.767°W |
| ✓ 2004_0815_r001s05 | 25.977°N | -81.769°W |
| ✓ 2004_0815_r001s06 | 25.983°N | -81.77°W |

> 500 photos - too many results to Zip

shoreline_activity_dia....doc Show All

Spatial/Temporal Search:

Barrier Islands Photos Use Case

coastal.er.usgs.gov/development/usecase/usecase.php#spatial-tab

Tampa Reflectivity L Tampa Weather Tropical/Hurricane 5 Yahoo USGS - BisonConnect Karens Work Related Dictionary.com Temp Other Bookmarks

CMGP Use Case, Barrier Islands Photos: Multiple Database Image Search Prototype

Event Search

Date Range

From: January 1 1990

To: January 1 2020

Latitude

From: 27 To: 28

Longitude

From: 82 To: 83

or state/county

select state or select county

Submit Search

Spatial/Temporal Search

You have selected stations located from 27° to 28° N and from 82° to 83° W and the time period Jan 01, 1990 to Jan 01, 2020.

Map Satellite Hybrid

Drag Zoom

20 mi 50 km

Imagery ©2013 TerraMetrics, Map data ©2013 Google, Terms of Use

Legend:

- Event Track
- Event Track within 50 miles of coast

2004-08-15 2005-10-25 2006-11-14 2008-09-14 2010-05-19 2010-05-20 2010-06-22 2010-06-23 2012-02-07

Search Results: 4375 photos fall within the bounding selections.

| Images | Latitude | Longitude |
|-------------------|----------|-----------|
| 2004_0815_r025s03 | 27.001°N | -82.413°W |
| 2004_0815_r025s04 | 27.003°N | -82.414°W |
| 2004_0815_r025s05 | 27.005°N | -82.415°W |
| 2004_0815_r025s06 | 27.007°N | -82.416°W |
| 2004_0815_r025s07 | 27.008°N | -82.417°W |
| 2004_0815_r025s08 | 27.011°N | -82.418°W |

> 500 photos - too many results to Zip

Spatial/Temporal Search: Select a month day and year

Barrier Islands Photos Use

coastal.er.usgs.gov/development/usecase/usecase.php#spatial-tab

Tampa Reflectivity L Tampa Weather Tropical/Hurricane 5 Yahoo USGS - BisonConnect Karens Work Related Dictionary.com Temp Other Bookmarks

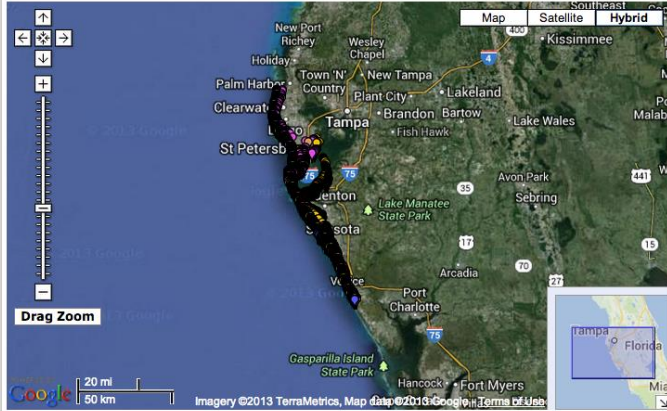
CMG Case, Barrier Islands Photos: Multiple Database Image Search Prototype

month
✓ January
February
March
April
May
June
July
August
September
October
November
December

Event Spatial/Temporal Search

Date Range
From: 1 1990
To: 1 2020
Latitude
From: To:
Longitude
From: 82 To: 83
or state/county
select state or select county
Submit Search

You have selected stations located from 27° to 28° N and from 82° to 83° W and the time period Jan 01, 1990 to Jan 01, 2020.



Map Satellite Hybrid

Drag Zoom

20 mi 50 km

Imagery ©2013 TerraMetrics, Map data ©2013 Google, Terms of Use

Legend: Event Track Event Track within 50 miles of coast

2004-08-15 2005-10-25 2006-11-14 2008-09-14 2010-05-19 2010-05-20 2010-06-22 2010-06-23 2012-02-07

Search Results: **4375 photos** fall within the bounding selections.

| Images | Latitude | Longitude |
|---------------------|----------|-----------|
| ✓ 2004_0815_r025s03 | 27.001°N | -82.413°W |
| ✓ 2004_0815_r025s04 | 27.003°N | -82.414°W |
| ✓ 2004_0815_r025s05 | 27.005°N | -82.415°W |
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| ✓ 2004_0815_r025s07 | 27.008°N | -82.417°W |
| ✓ 2004_0815_r025s08 | 27.011°N | -82.418°W |

> 500 photos - too many results to Zip

Spatial/Temporal Search: Enter a Lat/Long

Barrier Islands Photos Use

coastal.er.usgs.gov/development/usecase/usecase.php#spatial-tab

Tampa Reflectivity L Tampa Weather Tropical/Hurricane 5 Yahoo USGS - BisonConnect Karens Work Related Dictionary.com Temp Other Bookmarks

CMGP Use Case, Barrier Islands Photos: Multiple Database Image Search Prototype

Event Search

Date Range
 From: January 1 1990
 To: January 1 2020
Latitude
 From: 27 To: 28
Longitude
 From: 82 To: 83
 or state/county
 select state or select county
 Submit Search

Spatial/Temporal Search

You have selected stations located from 27° to 28° N and from 82° to 83° W and the time period Jan 01, 1990 to Jan 01, 2020.

Map Satellite Hybrid

Drag Zoom

20 mi 50 km

Imagery ©2013 TerraMetrics, Map data ©2013 Google, Terms of Use

Legend:

- Event Track
- Event Track within 50 miles of coast
- 2004-08-15
- 2005-10-25
- 2006-11-14
- 2008-09-14
- 2010-05-19
- 2010-05-20
- 2010-06-22
- 2010-06-23
- 2012-02-07

Search Results: 4375 photos fall within the bounding selections.

| Images | Latitude | Longitude |
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| ✓ 2004_0815_r025s07 | 27.008°N | -82.417°W |
| ✓ 2004_0815_r025s08 | 27.011°N | -82.418°W |

> 500 photos - too many results to Zip

Spatial/Temporal Search: Select a State & County

select state/county

- Texas
 - Cameron
 - Willacy
 - Kenedy
 - Kleberg
 - Nueces
 - Aransas
 - Calhoun
 - Matagorda
 - Brazoria
 - Galveston
 - Chambers
 - Jefferson
- Louisiana
 - Cameron
 - Vermilion
 - Iberia
 - Saint Mary
 - Terrebonne
 - Lafourche
 - Jefferson
 - Plaquemines
 - Saint Bernard
- Mississippi
 - Hancock
 - Harrison
 - Jackson
- Alabama
 - Mobile
 - Baldwin
- Florida
 - Escambia
 - Santa Rosa
 - Walton
 - Bay
 - Gulf
 - Franklin
 - Wakulla
 - Jefferson
 - Taylor
 - Dixie
 - Levy
 - Citrus
 - Hernando
 - Pasco
 - Pinellas
 - Manatee
 - Sarasota
 - Charlotte
 - Lee
 - Collier
 - Monroe
 - Dade
 - Broward
 - Palm Beach
 - Martin
 - St. Lucie
 - Indian River
 - Brevard
 - Volusia
 - Flagler
 - St. Johns

Barrier Islands Photos: Multiple Database Image Search Prototype

Spatial/Temporal Search

1990 2020

Select county

Search

You have selected stations located from **27° to 28° N** and from **82° to 83° W** and the time period Jan 01, 1990 to Jan 01, 2020.

Legend: Event Track Event Track within 50 miles of coast

2004-08-15 2005-10-25 2006-11-14 2008-09-14 2010-05-19 2010-05-20 2010-06-22

2010-06-23 2012-02-07

Search Results: 4375 photos fall within the bounding selections.

| Images | Latitude | Longitude |
|-------------------|----------|-----------|
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| 2004_0815_r025s04 | 27.003°N | -82.414°W |
| 2004_0815_r025s05 | 27.005°N | -82.415°W |
| 2004_0815_r025s06 | 27.007°N | -82.416°W |
| 2004_0815_r025s07 | 27.008°N | -82.417°W |
| 2004_0815_r025s08 | 27.011°N | -82.418°W |

> 500 photos - too many results to Zip

Zoom Tool: Click and Drag

coastal.er.usgs.gov/development/usecase/usecase.php#spatial-tab

CMGP Use Case, Barrier Islands Photos: Multiple Database Image Search Prototype

Event Search **Spatial/Temporal Search**

Date Range
 From: January 1 1990
 To: January 1 2020

Latitude
 From: 27 To: 28

Longitude
 From: 82 To: 83

or state/county
 select state or select county

Submit Search

You have selected stations located from 27° to 28° N and from 82° to 83° W and the time period Jan 01, 1990 to Jan 01, 2020.

Legend: Event Track Event Track within 50 miles of coast

2004-08-15 2005-10-25 2006-11-14 2008-09-14 2010-05-19 2010-05-20 2010-06-22 2010-06-23 2012-02-07

Search Results: **4375 photos** fall within the bounding selections.

| Images | Latitude | Longitude |
|-------------------|----------|-----------|
| 2004_0815_r025s03 | 27.001°N | -82.413°W |
| 2004_0815_r025s04 | 27.003°N | -82.414°W |
| 2004_0815_r025s05 | 27.005°N | -82.415°W |
| 2004_0815_r025s06 | 27.007°N | -82.416°W |
| 2004_0815_r025s07 | 27.008°N | -82.417°W |
| 2004_0815_r025s08 | 27.011°N | -82.418°W |

> 500 photos - too many results to Zip

Zoom Tool: Click and Drag

coastal.er.usgs.gov/development/usecase/usecase.php#spatial-tab

CMGP Use Case, Barrier Islands Photos: Multiple Database Image Search Prototype

Event Search **Spatial/Temporal Search**

Date Range
 From: January 1 1990
 To: January 1 2020

Latitude
 From: 27 To: 28

Longitude
 From: 82 To: 83

or state/county
 select state or select county

Submit Search

You have selected stations located from 27° to 28° N and from 82° to 83° W and the time period Jan 01, 1990 to Jan 01, 2020.

Drag a region on the map

Legend: Event Track Event Track within 50 miles of coast
 2004-08-15 2005-10-25 2006-11-14 2008-09-14 2010-05-19 2010-05-20 2010-06-22
 2010-06-23 2012-02-07

Search Results: **4375 photos** fall within the bounding selections.

| Images | Latitude | Longitude |
|-------------------|----------|-----------|
| 2004_0815_r025s03 | 27.001°N | -82.413°W |
| 2004_0815_r025s04 | 27.003°N | -82.414°W |
| 2004_0815_r025s05 | 27.005°N | -82.415°W |
| 2004_0815_r025s06 | 27.007°N | -82.416°W |
| 2004_0815_r025s07 | 27.008°N | -82.417°W |
| 2004_0815_r025s08 | 27.011°N | -82.418°W |

> 500 photos - too many results to Zip

Zoom Tool: Click and Drag

CMGP Use Case, Barrier Islands Photos: Multiple Database Image Search Prototype

Event Search **Spatial/Temporal Search**

Date Range
From: January 1 1990
To: January 1 2020

Latitude
From: 27 To: 28

Longitude
From: 82 To: 83

or state/county
select state or select county

Submit Search

You have selected stations located from 27° to 28° N and from 82° to 83° W and the time period Jan 01, 1990 to Jan 01, 2020.

Map Satellite Hybrid

Drag Zoom
Drag Zoom Back

Legend:
Event Track
Event Track within 50 miles of coast

2004-08-15 2005-10-25 2006-11-14 2008-09-14 2010-05-19 2010-05-20 2010-06-22
2010-06-23 2012-02-07

Search Results: **4375 photos** fall within the bounding selections.

Images Latitude Longitude

| | | |
|-------------------|----------|-----------|
| 2004_0815_r025s03 | 27.001°N | -82.413°W |
| 2004_0815_r025s04 | 27.003°N | -82.414°W |
| 2004_0815_r025s05 | 27.005°N | -82.415°W |
| 2004_0815_r025s06 | 27.007°N | -82.416°W |
| 2004_0815_r025s07 | 27.008°N | -82.417°W |
| 2004_0815_r025s08 | 27.011°N | -82.418°W |

> 500 photos - too many results to Zip

shoreline_activity_dia...doc Show All

View thumbnails

coastal.er.usgs.gov/development/usecase/usecase.php#spatial-tab

CMGP Use Case, Barrier Islands Photos: Multiple Database Image Search Prototype

Event Search **Spatial/Temporal Search**

Date Range
 From: January 1 1990
 To: January 1 2020

Latitude
 From: 27 To: 28

Longitude
 From: 82 To: 83

or state/county
 select state or select county

Submit Search

You have selected stations located from 27° to 28° N and from 82° to 83° W and the time period Jan 01, 1990 to Jan 01, 2020.

Map Satellite Hybrid

Drag Zoom
 Drag Zoom
 Back

2000 ft
 1 km

Legend:

- Event Track
- Event Track within 50 miles of coast
- 2004-08-15
- 2005-10-25
- 2006-11-14
- 2008-09-14
- 2010-05-19
- 2010-05-20
- 2010-06-22
- 2010-06-23
- 2012-02-07

Search Results: **4375 photos** fall within the bounding selections.

| Images | Latitude | Longitude |
|-------------------|----------|-----------|
| 2004_0815_r025s03 | 27.001°N | -82.413°W |
| 2004_0815_r025s04 | 27.003°N | -82.414°W |
| 2004_0815_r025s05 | 27.005°N | -82.415°W |
| 2004_0815_r025s06 | 27.007°N | -82.416°W |
| 2004_0815_r025s07 | 27.008°N | -82.417°W |
| 2004_0815_r025s08 | 27.011°N | -82.418°W |

> 500 photos - too many results to Zip

shoreline_activity_dia....doc

Show All

View thumbnails

Barrier Islands Photos Use Case

coastal.er.usgs.gov/development/usecase/usecase.php

Tampa Reflectivity | Tampa Weather | Tropical/Hurricane | Yahoo | USGS - BisonConnect | Karens | Work Related | Other Bookmarks

CMGP Use Case, Barrier Islands Photos: Multiple Database Image Search Prototype

Event Search | **Spatial/Temporal Search**

Step 1: Select an event and submit search

Returns photos +/- one month and +/- one degree lat/long of hurricane interaction with shoreline.

select hurricane (alpha) or select hurricane (chron)

Submit Event Search

Step 2: Refine Search (if needed)

Use fields below to refine event search. Default event search returns photos +/- one month and +/- one degree lat/long of hurricane interaction with shoreline.

Date Range

From: January 1 1990 To: January 1 2020

Latitude

From: 27 To: 28

Longitude

From: 82 To: 83

or state/county (listed counterclockwise around the Gulf from the Mexican to the Canadian border)

select state/county

Submit Refined Search

You have selected stations located from **27° to 28° N** and from **82° to 83° W** and the time period Jan 01, 1990 to Jan 01, 2020.

Map | Satellite | Hybrid

Drag Zoom | Drag Zoom Back

2000 ft | 1 km

Imagery ©2013 | Map data ©2013 - Terms of Use

Legend: Event Track | Event Track within 50 miles of coast

2004-08-15 | 2005-10-25 | 2006-11-14 | 2008-09-14 | 2010-05-19 | 2010-05-20 | 2010-06-22 | 2010-06-23 | 2012-02-07

Search Results: **4375 photos** fall within the bounding selections.

| Images | Latitude | Longitude |
|---------------------|----------|-----------|
| ✓ 2004_0815_r025s03 | 27.001°N | -82.413°W |
| ✓ 2004_0815_r025s04 | 27.003°N | -82.414°W |
| ✓ 2004_0815_r025s05 | 27.005°N | -82.415°W |
| ✓ 2004_0815_r025s06 | 27.007°N | -82.416°W |
| ✓ 2004_0815_r025s07 | 27.008°N | -82.417°W |
| ✓ 2004_0815_r025s08 | 27.011°N | -82.418°W |

> 500 photos - too many results to Zip

Storm Tracks & Data

coastal.er.usgs.gov/event-case.php#event-tab

Barrier Islands Photos: Multiple Database Image Search Prototype

Event Search Spatial Search

Step 1: Select an event and search

Returns photos +/- one month and hurricane interaction with shoreline

select hurricane (alpha) or select event

Submit Event Search

Step 2: Refine Search (if needed)

Use fields below to refine event search returns photos +/- one month and hurricane interaction with shoreline

Date Range

From: January 1 To: January 1

Latitude

From: 27 To: 28

Longitude

From: 82 To: 83

or state/county

select state or select county

Submit Refined Search

HELENE 2000
HENRI 2003
HERMINE 1998
HERMINE 2004
HERMINE 2010
HUMBERTO 2007
IDA 2009
IKE 2008
IRENE 1999
IRENE 2011
ISAAC 2012
ISABEL 2003
ISIDORE 2002
IVAN 2004
JEANNE 2004
JERRY 1995
JOSEPHINE 1996
✓ KATRINA 2005
KYLE 2002
LEE 2011
LESLIE 2000
LILI 2002
MARCO 1990
MATTHEW 2004
MITCH 1998
OPAL 1995
OPHELIA 2005
RITA 2005
SANDY 2012
TAMMY 2005
TEN 2007
TWENTY-TWO 2005
TWO 2010
UNNAMED 1992
UNNAMED 1994
UNNAMED 2000
UNNAMED 2003
WILMA 2005

You have selected stations located from 27° to 28° N and from 82° to 83° W and the time period Jan 01, 1990 to Jan 01, 2020.

Map Satellite Hybrid

Drag Zoom

20 mi 50 km

Imagery ©2013 TerraMetrics, Map data ©2013 Google, Terms of Use

Legend:

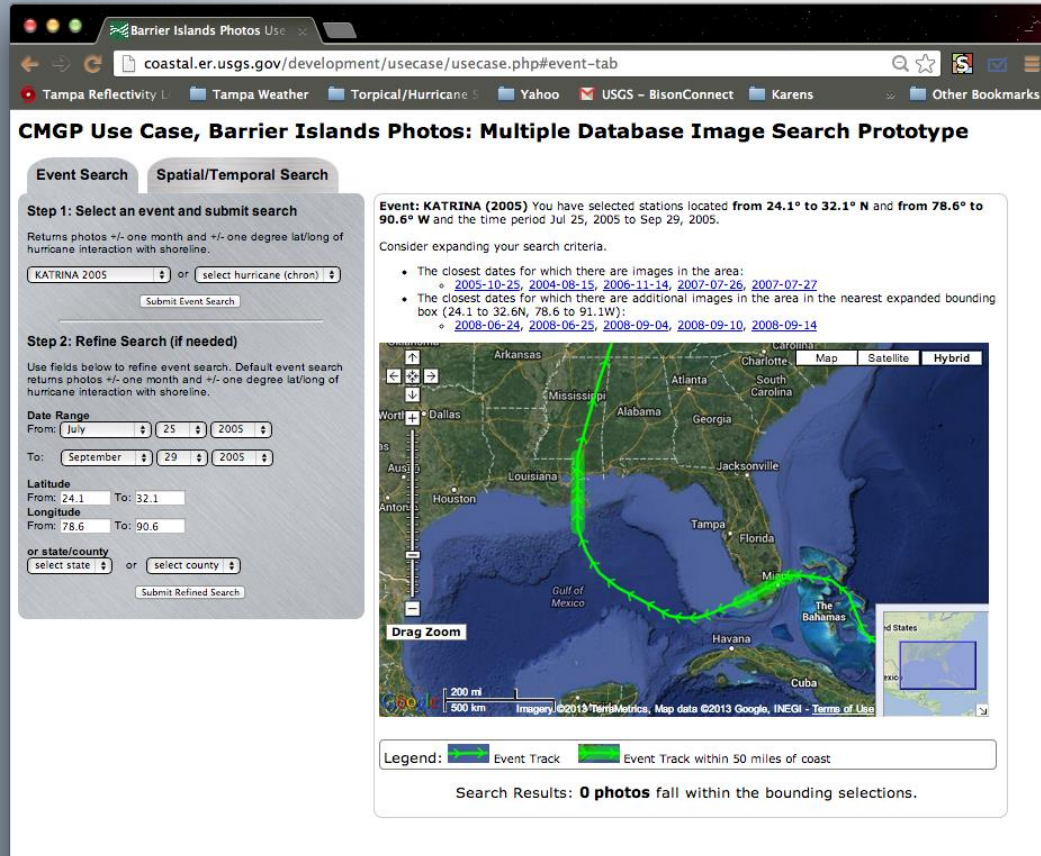
- Event Track
- Event Track within 50 miles of coast
- 2004-08-15
- 2005-10-25
- 2006-11-14
- 2008-09-14
- 2010-05-19
- 2010-05-20
- 2010-06-22
- 2010-06-23
- 2012-02-07



Search Results: 4375 photos fall within the bounding selections.

> 500 photos - too many results to Zip

| Images | Latitude | Longitude |
|---------------------|----------|-----------|
| ✓ 2004_0815_r025s03 | 27.001°N | -82.413°W |
| ✓ 2004_0815_r025s04 | 27.003°N | -82.414°W |
| ✓ 2004_0815_r025s05 | 27.005°N | -82.415°W |
| ✓ 2004_0815_r025s06 | 27.007°N | -82.416°W |
| ✓ 2004_0815_r025s07 | 27.008°N | -82.417°W |
| ✓ 2004_0815_r025s08 | 27.011°N | -82.418°W |

Storm Track: Katrina



Legend:  Event Track  Event Track within 50 miles of coast

Track data: <http://weather.unisys.com/hurricane/index.php>

Barrier Islands Photos Use Case

coastal.er.usgs.gov/development/usecase/usecase.php#event-tab

Tampa Reflectivity L Tampa Weather Torpical/Hurricane Yahoo USGS - BisonConnect Karens Other Bookmarks

CMGP Use Case, Barrier Islands Photos: Multiple Database Image Search Prototype

Event Search **Spatial/Temporal Search**

Step 1: Select an event and submit search

Returns photos +/- one month and +/- one degree lat/long of hurricane interaction with shoreline.

KATRINA 2005 or select hurricane (chron)

Submit Event Search

Step 2: Refine Search (if needed)

Use fields below to refine event search. Default event search returns photos +/- one month and +/- one degree lat/long of hurricane interaction with shoreline.

Date Range
 From: July 25 2005
 To: September 29 2005

Latitude
 From: 24.1 To: 32.1

Longitude
 From: 78.6 To: 90.6

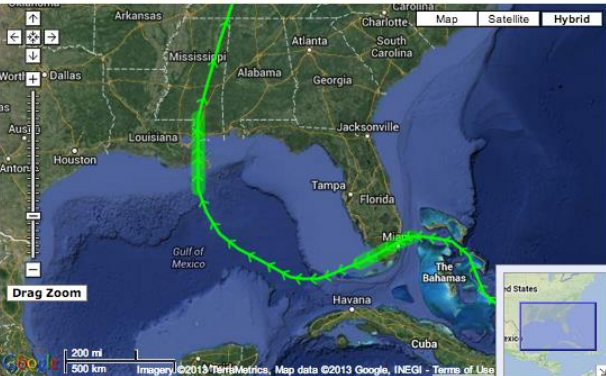
or state/county
 select state or select county

Submit Refined Search

Event: KATRINA (2005) You have selected stations located from 24.1° to 32.1° N and from 78.6° to 90.6° W and the time period Jul 25, 2005 to Sep 29, 2005.

Consider expanding your search criteria.

- The closest dates for which there are images in the area:
 - 2005-10-25, 2004-08-15, 2006-11-14, 2007-07-26, 2007-07-27
- The closest dates for which there are additional images in the area in the nearest expanded bounding box (24.1 to 32.6N, 78.6 to 91.1W):
 - 2008-06-24, 2008-06-25, 2008-09-04, 2008-09-10, 2008-09-14



If there are no images to match your search, the tool will offer a list of other possible dates from which to choose.

Event: KATRINA (2005) You have selected stations located from 24.1° to 32.1° N and from 78.6° to 90.6° W and the time period Jul 25, 2005 to Sep 29, 2005.

Consider expanding your search criteria.

- The closest dates for which there are images in the area:
 - 2005-10-25, 2004-08-15, 2006-11-14, 2007-07-26, 2007-07-27
- The closest dates for which there are additional images in the area in the nearest expanded bounding box (24.1 to 32.6N, 78.6 to 91.1W):
 - 2008-06-24, 2008-06-25, 2008-09-04, 2008-09-10, 2008-09-14

CMGP Use Case, Barrier Islands Photos: Multiple Database Image Search Prototype

Event Search **Spatial/Temporal Search**

Step 1: Select an event and submit search
Returns photos +/- one month and +/- one degree lat/long of hurricane interaction with shoreline.

select hurricane (alpha) or select hurricane (chron)

Submit Event Search

Step 2: Refine Search (if needed)
Use fields below to refine event search. Default event search returns photos +/- one month and +/- one degree lat/long of hurricane interaction with shoreline.

Date Range
From: June 24 2008
To: June 24 2008

Latitude
From: 24.1 To: 32.6
Longitude
From: 78.6 To: 91.1

or state/county
select state or select county

Submit Refined Search

Event: KATRINA (2005) You have selected stations located from 24.1° to 32.6° N and from 78.6° to 91.1° W and the time period Jun 24, 2008 to Jun 24, 2008.

Legend: Event Track Event Track within 50 miles of coast

Search Results: **1088 photos** fall within the bounding selections.

| Images | Latitude | Longitude |
|-------------------|----------|-----------|
| 2008_0624_1738146 | 30.696°N | -88.243°W |
| 2008_0624_1735236 | 30.695°N | -88.251°W |
| 2008_0624_1734426 | 30.675°N | -88.261°W |
| 2008_0624_1733156 | 30.628°N | -88.278°W |
| 2008_0624_1725456 | 30.353°N | -88.509°W |
| 2008_0624_1721276 | 30.285°N | -88.563°W |

Barrier Islands Photos Use Case

CMGP Use Case, Barrier Islands Photos: Multiple Database Image Search Prototype

Event Search **Spatial/Temporal Search**

Step 1: Select an event and submit search
Returns photos +/- one month and +/- one degree lat/long of hurricane interaction with shoreline.

select hurricane (alpha) or select hurricane (chron)

Submit Event Search

Step 2: Refine Search (if needed)
Use fields below to refine event search. Default event search returns photos +/- one month and +/- one degree lat/long of hurricane interaction with shoreline.

Date Range
From: June 24 2008
To: June 24 2008

Latitude
From: 24.1 To: 32.6
Longitude
From: 78.6 To: 91.1

or state/county (listed counterclockwise around the Gulf from the Mexican to the Canadian border)
select state/county

Submit Refined Search

Event: KATRINA (2005) You have selected stations located from 24.1° to 32.6° N and from 78.6° to 91.1° W and the time period Jun 24, 2008 to Jun 24, 2008.

Legend: Event Track Event Track within 50 miles of coast

Search Results: **1088 photos** fall within the bounding selections.

| Images | Latitude | Longitude |
|-------------------|----------|-----------|
| 2008_0624_1738146 | 30.696°N | -88.243°W |
| 2008_0624_1735236 | 30.695°N | -88.251°W |
| 2008_0624_1734426 | 30.675°N | -88.261°W |
| 2008_0624_1733156 | 30.628°N | -88.278°W |
| 2008_0624_1723476 | 30.353°N | -88.509°W |
| 2008_0624_1721276 | 30.285°N | -88.563°W |

File Retrieval

Barrier Islands Photos Use x Barrier Islands Photos Use x Inbox - kmorgan@usgs.gov x

coastal.er.usgs.gov/development/usecase/usecase.php#event-tab

Tampa Weather Torpical/Hurricane Yahoo USGS - BisonConnect Karens Work Related Other Bookmarks

Barrier Islands Photos: Multiple Database Image Search Prototype

Event: CHARLEY (2004) You have selected stations located from 27.56° to 28.18° N and from 82.67° to 82.86° W and the time period Jul 13, 2004 to Sep 15, 2004.

Legend: Event Track Event Track within 50 miles of coast

2004-08-15

Search Results: 30 photos fall within the bounding selections.

| Images | Latitude | Longitude |
|---|----------|-----------|
| <input checked="" type="checkbox"/> 2004_0815_r034s07 | 27.561°N | -82.746°W |
| <input checked="" type="checkbox"/> 2004_0815_r034s08 | 27.563°N | -82.749°W |
| <input checked="" type="checkbox"/> 2004_0815_r034s09 | 27.565°N | -82.752°W |
| <input checked="" type="checkbox"/> 2004_0815_r034s10 | 27.567°N | -82.755°W |
| <input checked="" type="checkbox"/> 2004_0815_r034s11 | 27.568°N | -82.756°W |
| <input checked="" type="checkbox"/> 2004_0815_r034s12 | 27.569°N | -82.758°W |

Download Result Set Zip file (30 photos)

To include only the photo files you want in the Zip file, uncheck any unwanted photos at left, and then click "Update Zip File" below.

Update Zip File

shoreline_activity_dia...doc Show All

Next Step: Where do we go from here?

- Integrate other data sets
 - Xstorms (done)
 - Lidar Vertical imagery (EAARL)
 - NWRC Wetlands (Lafayette)
 - USGS Photo Database (Reston)
 - Other Photo Databases?
- Integrate other data types
 - Vertical photography
 - Ground photography
 - Non-coastal images
 - Underwater images
- Expand search possibilities
 - Place names?

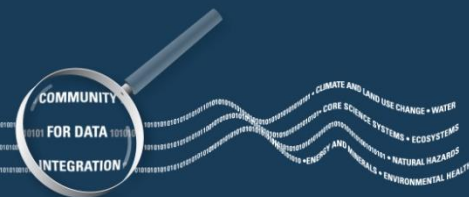
Conclusions: What did we learn?

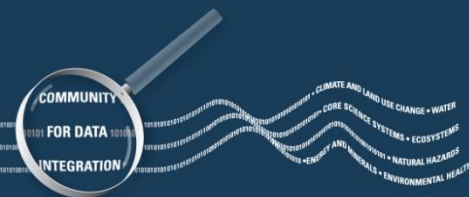
- Use cases are a good way to brain storm, strategized and develop a tool. However, you must have a narrow, focused plan. Don't try to do too much.
- Using the technologies and experts already on hand can reduce the development costs until such time as you have proof of concept.
- Don't try to do everything at once. Iterate, iterate, iterate. The process of revisiting each new version sparked ideas and expansions for the next version. This is the rapid development part.
- We learned a lot as we went about the nature of Use Cases. What to include, what not to include, how to approach each problem and how seeing one thing work (or not) would spark ideas for the next iteration.

Questions?

- **Contact Email:**
 - Karen L. M. Morgan
- kmorgan@usgs.gov

Thank you





Next Step:

Barrier Islands Photos Use Case

coastal.er.usgs.gov/development/usecase/usecase.php#event-tab

Tampa Reflectivity L Tampa Weather Torpical/Hurricane S Yahoo USGS - BisonConnect Karens Other Bookmarks

CMGP Use Case, Barrier Islands Photos: Multiple Database Image Search Prototype

Event Search

Step 1: Select an event and submit search

Returns photos +/- one month and +/- one degree lat/long of hurricane interaction with shoreline.

KATRINA 2005 or select hurricane (chron) Submit Event Search

Step 2: Refine Search (if needed)

Use fields below to refine event search. Default event search returns photos +/- one month and +/- one degree lat/long of hurricane interaction with shoreline.

Date Range
From: July 25 2005
To: September 29 2005

Latitude
From: 24.1 To: 32.1
Longitude
From: 78.6 To: 90.6

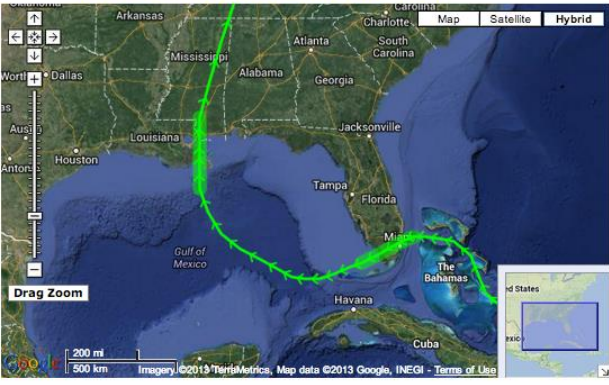
or state/county
select state or select county Submit Refined Search

Spatial/Temporal Search

Event: KATRINA (2005) You have selected stations located from 24.1° to 32.1° N and from 78.6° to 90.6° W and the time period Jul 25, 2005 to Sep 29, 2005.

Consider expanding your search criteria.

- The closest dates for which there are images in the area:
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- The closest dates for which there are additional images in the area in the nearest expanded bounding box (24.1 to 32.6N, 78.6 to 91.1W):
 - 2008-06-24, 2008-06-25, 2008-09-04, 2008-09-10, 2008-09-14



Legend: Event Track Event Track within 50 miles of coast

Search Results: 0 photos fall within the bounding selections.

coastal.er.usgs.gov/development/usecase/usecase.php?year_from=2006&month_from=11&day_from=14&year_to=2006&month_to=11&day_to=14&lat_from=24.10000...